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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/604,740	08/13/2003	William Randolph Stowell	124251	1739

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EXAMINER

CARRILLO, BIBI SHARIDAN

ART UNIT	PAPER NUMBER
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1746

DATE MAILED: 04/12/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/604,740

Applicant(s)

STOWELL ET AL.

Examiner

Sharidan Carrillo

Art Unit

1746

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 February 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1, 3, 6-10, 12-16, 22, 23, 27 and 28 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

- 5) ☐ Claim(s) _____ is/are allowed.

- 6) ☒ Claim(s) 1, 3, 6-10, 12-16, 22-23

and 27-28 is/are rejected.

- 7) ☐ Claim(s) _____ is/are objected to.

- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. Claims 1, 6-10, and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dopfer (US2001/0055653) in view of Wulff ((3852061).

Dopper teaches a method of removing oxide from a gas turbine blade 1 by directing a plasma 21 towards the substrate surface, as illustrated in Fig. 4 (paragraphs 11, 20, 55-57). In reference to an alloy surface, refer to paragraph 42. In reference to claim 7, refer to paragraph 20, 54, 56-57. In reference to claims 9-10, refer to Fig. 4. In reference to claim 13, refer to paragraphs 38 and 55.

Dopper teaches removing oxides, but fails to teach removing metal oxides. However, it would have been obvious to a person of ordinary skill in the art to remove metal oxides since Dopper provides a general teaching of removing oxides and other contaminants, which would also include metal oxides. Additionally, it is notoriously well known in the art to use plasma to remove metal oxides from substrate surfaces (3852061, 2001/0050265, 3651136).

Dopper teaches the invention substantially as claimed with the exception of the low pressure within the chamber. Wulff teaches a vacuum plasma apparatus as illustrated in Fig. 1, which is used for reduction of metal oxides (col. 1, lines 5-10). Fig. 1 teaches a discharge nozzle 22b, a plasma source (col. 5, lines 1-5), electrodes 16, 18, and a power supply (col. 4, lines 55-60) for generating an arc discharge of ionized gas (col. 5, lines 1-5) used for reducing metal oxides. In reference to the pressure of the vacuum chamber, refer to col. 5, lines 1-5. It would have been obvious to a person of ordinary skill in the art to have modified the method of Dopper to include the plasma of Wulff, for purposes of performing the same function of reducing metal oxides on the substrate surface. In reference to claims 6, 8, Wulff teaches between about 1 and 10 torr.

Dopper in view of Wulff fail to teach generating a meta-stable H_3^+ plasma. However, both references teach removal and reduction of metal oxide by generating a plasma using hydrogen. Wulff teaches pressures of 1-10 Torr. One would have reasonably expected the generation of meta-stable H_3^+ plasma since Wulff uses the same pressure conditions as the instantly claimed invention. Additionally, one would have reasonably expected H_3^+ plasma to be formed since the ionization of hydrogen gas would result in various species of hydrogen being formed, one of which being H_3^+ plasma.

5. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dopper (US2001/0055653) in view of Wulff ((3852061), as applied to claims 1, 6-10 and 13 as described in paragraph 4 above, and further in view of Restall et al. (4698130).

Dopper in view of Wulff fails to teach the limitations of claim 3. Restall et al. teach that it is conventional for turbine blades to incur damage by cracking. In col. 1, lines 15-25, Restall et al. teach that blades are prone to oxide contamination and further teaches the desire to remove the contaminants from cracks found in the turbine blades. Restall further teaches the need to provide a cleaning process which penetrates the cracks in order to effectively remove contaminants therefrom. It would have been obvious to a person of ordinary skill in the art to have modified the method of Dopper to include the turbine blade comprising crevices having contaminants therein since Restall teaches that during normal use, the components are routinely found to have incurred damage to a degree which requires repair provided that surface contamination from the crevices are removed.

Art Unit: 1746

6. Claims 12, 15-16, 22-23, and 27-28 are rejected under 35 U.S.C. 103(a) as being over Dopper (US2001/0055653) in view of Wulff ((3852061), as applied to claims 1, 6-10, and 13 as described in paragraph 4 above, and further in view of Cohen et al. (US2001/0050265).

Dopper in view of Wulff teaches the invention substantially as claimed with the exception of the limitations of claims 12 and 15. Cohen et al. teach the removal of metal oxides from substrate surfaces using conventional process gases comprising 5% or less hydrogen premixed with an inert gas (paragraph 12).

It would have been obvious to a person of ordinary skill in the art to have modified the method of Dopper to include hydrogen having a concentration of less than 5%, premixed with an inert gas, which are conventionally used, as taught by Cohen, for generating a plasma used in the reduction of metal oxide from substrate surfaces. In reference to claims 15, 22-23, and 27-28, Wulff teaches between about 1 and 10 torr. In reference to claim 16, refer to paragraphs 38 and 55 of Dopper.

7. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dopper (US2001/0055653) in view of Wulff, and Cohen et al. (US2001/0050265), as applied to claims 12, 15-16, 22-23 and 27-28 as described in paragraph 6 above, and further in view of Venus et al. (3851136).

Dopper in view of Wulff and Cohen fails to teach the limitations of claim 14.

Venus

teaches in Fig. 1, generating a plasma through a magnetic channel for purposes of accelerating the electrons used in the reduction of metal oxides. It would have been

within the level of the skilled artisan to have modified the method of Doppler to include a magnetic field channel, as taught by Venus, for purposes of transmitting the flow of electrons within the plasma for use in the reduction of metal oxides.

Response to Arguments

8. The rejection of the claims under 112, second paragraph is withdrawn in view of the newly amended claims.

9. The rejection of the claims as unpatentable over Doppler in view of Wulff are maintained. Applicant argues that Doppler fails to teach the pressure or other conditions necessary to form the meta-stable plasma state. Applicant further argues on page 11 of the response that the pressure conditions necessary to form a meta-stable H_3^+ are not required in the claims. Applicant's arguments are unpersuasive because it is based on the premise that the prior art fails to teach the pressure conditions, yet the pressure conditions are not required in order to form the meta-stable H_3^+ . The examiner maintains the position that applicant's arguments are unpersuasive since they are not commensurate with the limitations of claim 1. Claim 1 does not recite the specific pressure conditions. In reference to claim 15, the vacuum of about 20 torr is taught by Wulff.

10. Applicant argues that Doppler fails to teach removal of metal oxide corrosion. Applicant's arguments are unpersuasive since the claims do not recite the removal of metal oxide. Doppler teaches the removal of oxide. Although, Doppler fails to teach metal oxide, the term "oxide is well known and equivalent to the term metal oxide (Kool et al., 6863738, col. 3, lines 50-60).

Art Unit: 1746

11. Applicant argues that neither Dopper nor Wulff teaches meta-stable $H3^+$.

Applicant's arguments are unpersuasive since one would have reasonably expected the generation of meta-stable $H3^+$ plasma since Wulff uses the same pressure conditions as the instantly claimed invention. Additionally, one would have reasonably expected $H3^+$ plasma to be formed since the ionization of hydrogen gas would result in various species of hydrogen being formed, one of which being $H3^+$ plasma. Further, **applicant's own admission** on page 7 of the Response of 2/6/06 states that ionizing hydrogen may contain "deminimus level of $H3^+$ ". The claims do not require or limit the $H3^+$ to a certain concentration level and therefore even "deminimus" levels of $H3^+$, resulting from ionization of hydrogen, would read on applicant's claimed invention. The burden is shifted on applicant to show that the ionization of hydrogen to produce a plasma would not result in the formation of $H3^+$ plasma.

12. Applicant argues the improper combination of Dopper with Wulff. Specifically, applicant argues that the process of Dopper is materially different from the process of Wulff, which is directed to converting metal oxide powder to a pure molten metal. Applicant further argues that Wulff does not teach alloys and particularly superalloy components. Applicant's arguments are unpersuasive since both references are directed to the reduction of metal oxides by treatment with a hydrogen generating plasma.

13. Applicant argues that Wulff teaches alternative gases which cannot provide a meta-stable $H3^+$. Applicant is directed to col. 5, lines 1-4 which teaches hydrogen.

14. Applicant argues that Dopper in view of Wulff fails to teach hydrogen in combination with an inert gas. The secondary reference of Cohen is relied upon to cure this deficiency.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sharidan Carrillo whose telephone number is 571-272-1297. The examiner can normally be reached on M-W 6:30-4:00pm, alternating Thursday.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Barr can be reached on 571-272-1414. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 1746

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Sharidan Carrillo
Primary Examiner
Art Unit 1746

bsc



SHARIDAN CARRILLO
PRIMARY EXAMINER